MODEL IDENTIFICATION

Various suspensions options are offered. Suspension variations are identified by the PR. numbers (they are also known as factory codes). Running gear version installed in vehicle is indicated by the factory weight code on the vehicle data plate. See **Fig. 1** .

Vehicle data plate is in the service booklet. The location on the vehicle depends on model year.

- Up to March, 2000 the vehicle data plate is in the spare tire wheel well.
- From April, 2000 the vehicle data plate is next to the spare tire wheel well, near the left rear wheelhousing.

The New Beetle is available with the following suspension options:

1GJ
Base suspension (2nd version)

1GD
Sport Suspension, comfort version

G87
Sport Suspension, from July, 2000

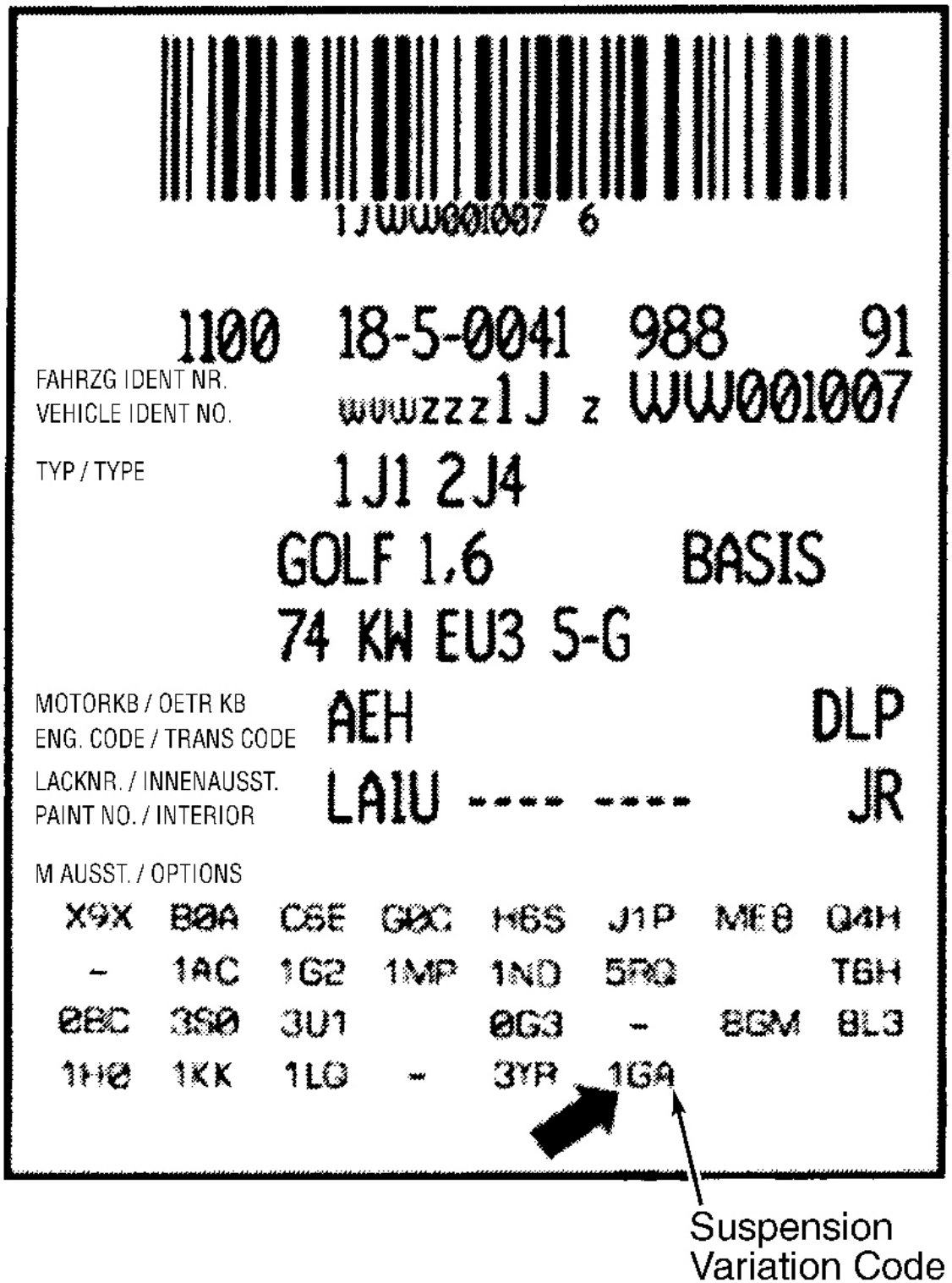
1JWW001007 6
1100 18-5-0041 988 91
FAHRZG IDENT NR.
VEHICLE IDENT NO. WVWZZZ1J z WW001007
TYP / TYPE 1J1 2J4
GOLF 1.6 BASIS
74 KW EU3 5-G
MOTORKB / OETR KB
ENG. CODE / TRANS CODE AEH DLP
LACKNR. / INNENAUSST.
PAINT NO. / INTERIOR LA1U ---- ---- JR
M AUSST. / OPTIONS
X9X B0A C5E GXC H6S J1P ME8 Q4H
- 1AC 1G2 1MP 1ND 5F0 T6H
0BC 3S0 3U1 0G3 - 8GM 8L3
1H0 1KK 1LO - 3YR 1GA
Suspension
Variation Code

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Fig. 1: Identifying Vehicle Data Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

THRUST ANGLE

To calculate the actual thrust angle from the vehicle longitudinal axis, see **Fig. 2** .

Thrust angle (deviation from direction of travel), calculating

- If alignment readings for rear toe are both positive or both negative (+/+ or -/-), subtract smaller figure from larger figure to determine total toe angle, and then divide by 2.

Left rear wheel toe	Right rear wheel toe
+ 15 ′	+ 5 ′

15 ′ - 5 ′ = 10 ′

10 ′ ÷ 2 = 5 ′

Thrust angle (deviation from direction of travel) = 5 ′

- If alignment readings for rear toe are different signs, one positive and one negative (+/-), add two figures to determine total toe angle, then divide by 2.

Left rear wheel toe	Right rear wheel toe
+ 15 ′	- 5 ′

15 ′ + 5 ′ = 20 ′

20 ′ ÷ 2 = 10 ′

Thrust angle (deviation from direction of travel):10 ′

The result is the deviation of the actual running direction from the longitudinal center line of the vehicle.

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Fig. 2: Calculating Thrust Angle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

PRELIMINARY CHECKS

CAUTION: DO NOT attempt to correct alignment by straightening parts. Damaged parts must be replaced.

Before adjusting wheel alignment, check following:

- Do not check vehicle alignment before vehicle has completed 600 to 1200 miles, to allow for coils springs to settle.
- Ensure tires are of same construction and tread style, equal in tread wear and overall diameter. Verify that radial and axial runout is not excessive. Inflation should be adjusted to manufacturer's specifications.
- Tire tread depth difference of no more than .079" (2 mm) on each axle.
- Steering linkage and suspension must not have excessive play. Check for wear in tie rod ends and ball joints. Springs must not be sagging. Control arm and strut rod bushings must not have excessive play.
- Vehicle must be on level floor with full fuel tank, no passenger load, spare tire in place and no load in trunk. Bounce front and rear end of vehicle several times. Confirm vehicle is at normal ride height.
- Steering wheel must be centered with wheels in straight ahead position. If required, shorten one tie rod adjusting sleeve and lengthen opposite sleeve (equal amount of turns).
- Wheel bearings should have the correct preload and wheel bolts must be tightened to manufacturer's specifications.
- The fluid reservoir for the windshield/headlight washer system must be full.
- Ensure that sliding plates and turntables (alignment equipment) are not touching an end stop when checking wheel alignment. Test equipment must be properly adjusted and attached to the vehicle; observe device manufacturer's operating instructions.

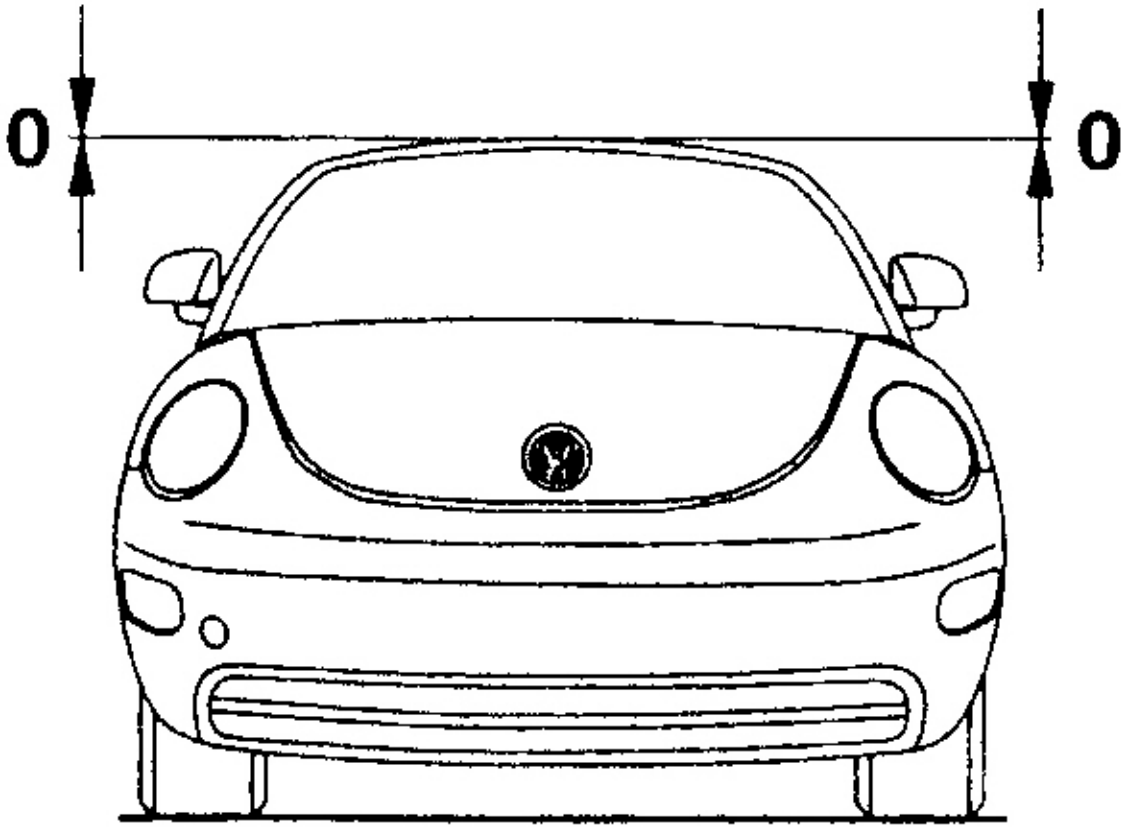
RIDE HEIGHT ADJUSTMENT

VEHICLE TRANSVERSE INCLINATION "ZERO POSITION"

If the measured values exceed tolerances, the cause may be an incorrect vehicle attitude.Vehicles with an automatic transmission can lean to one side slightly. This is due to the installation position of the assemblies and their associated weight transfer and is normal.

If vehicle leans to one side, measure dimension "a" on left and right-hand sides. Correct differences if necessary.

- On front axle, compensate by adding weight to top of relevant strut tower.
- On rear axle, compensate by adding weight to relevant side of luggage compartment.
- Sand filled bags weighting of about 22 lbs. (10 kg) are suitable for this.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0

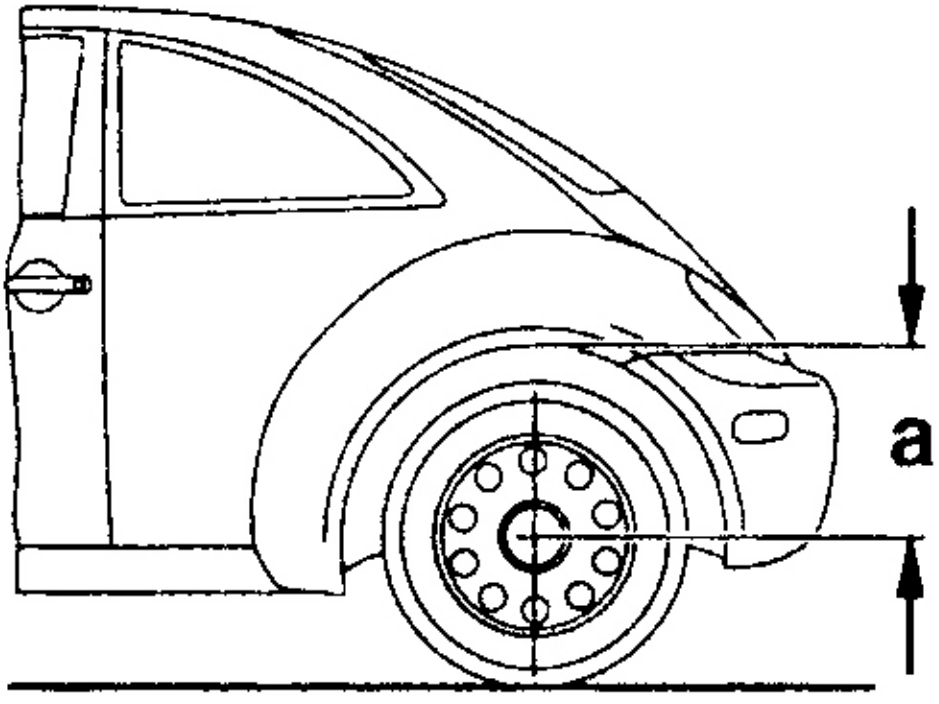
a

Fig. 3: Measuring Vehicle Transverse Inclination (Zero Position)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

JACKING & HOISTING

FLOOR JACK & HOIST

See **Fig. 4** for correcting lifting points. Always use a suitable rubber or wooden block between a floor jack and the vehicle.

CAUTION: Do not lift the vehicle at the engine oil pan, transmission or on front or rear axle as serious damage may result.

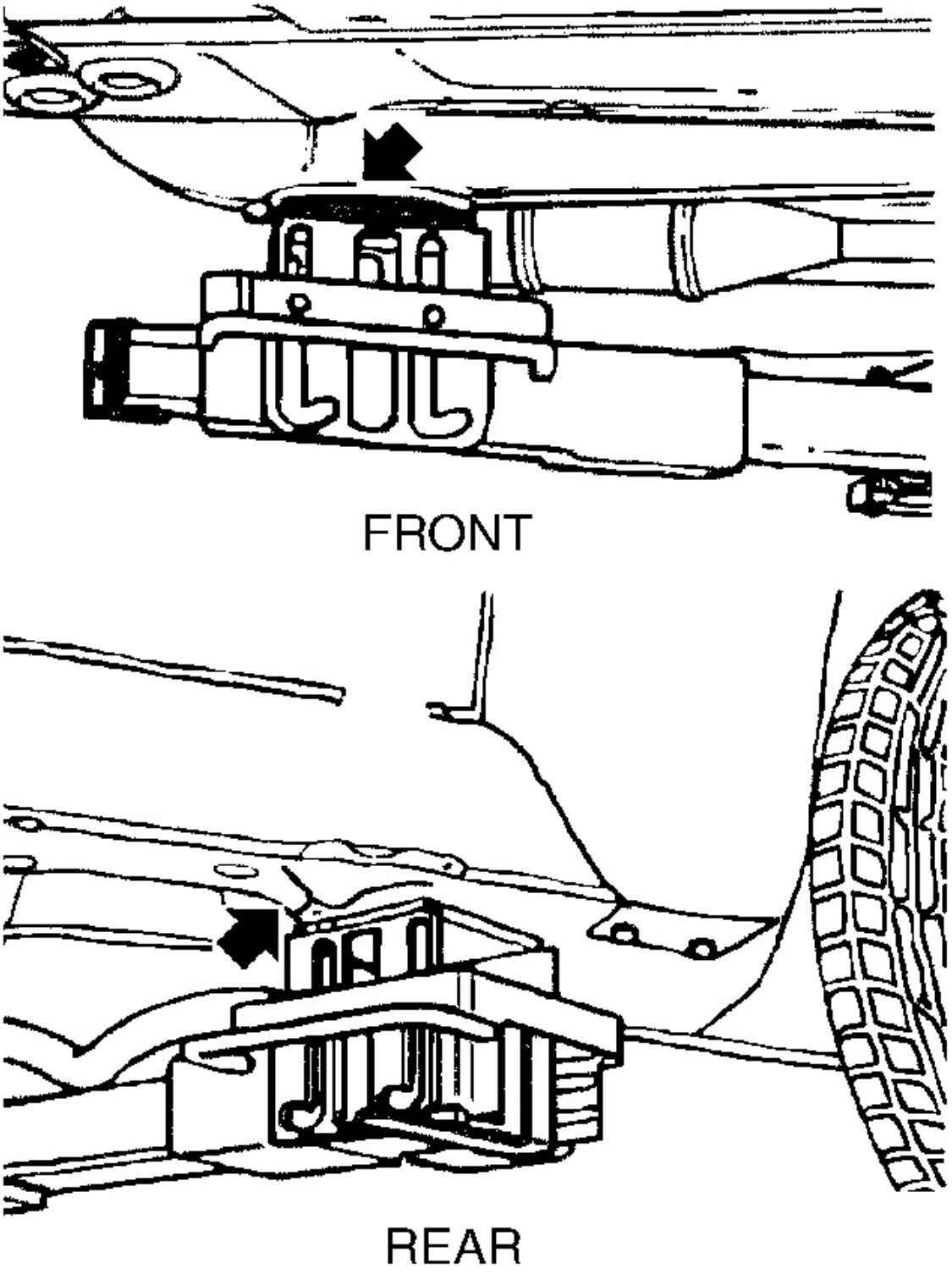

Fig. 4: Identifying Lifting Points (Beetle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL ALIGNMENT PROCEDURES

NOTE: While limited information is available, vehicle manufacturer does not support alignment information using aftermarket alignment equipment. To properly align vehicle, it is recommended to use VAG 1813 alignment computer. All procedures in this article are written using VAG 1813 alignment computer.

When performing wheel alignment procedures, observe following work sequence:

CONDITIONS FOR CHECKING WHEEL ALIGNMENT

Wheel alignment must be checked if:

- Not running properly.
- Involved in an accident and components have been changed.
- Axle components have been removed.
- Tires worn on one side.

Front axle component changed	Alignments necessary		Rear axle component changed	Alignments necessary	
	Yes	No		Yes	No
Lower control arm	X		Shock absorber		X
Wheel bearing housing	X		Coil spring		X
Toe rod/toe rod end	X		Torsion beam axle, complete	X	
Steering gear	X				
Subframe	X				
Shock absorber	X				

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Fig. 5: Conditions For Which Wheel Alignment Must Be Checked
Courtesy of VOLKSWAGEN UNITED STATES, INC.

WHEEL ALIGNMENT WORK SEQUENCE

- Using appropriate adapters connect VAG 1813 wheel alignment computer or equivalent to vehicle. Alignment is to always include both front and rear axles.
- The lateral run-out of the wheel must be compensated. Otherwise the result of the measurement will be incorrect. If the wheel run-out compensation is not performed it is not possible to adjust toe-in correctly!
- Check wheels for excessive out-of-balance condition. Balance or repair wheels as necessary.
- Check front axle camber and even out if necessary.
- Check camber at rear axle. Camber on rear axle cannot be adjusted.
- Check rear axle toe. Rear axle toe on cannot be adjusted.
- Check front axle toe with vehicle in initial position. Adjust as necessary.

- If suspension adjustments were changed, and vehicle is equipped with Electronic Stability Program (ESP), zeroing of steering angle sensor must be performed. For zero position of steering angle sensor procedure, see FUNCTION 04 - BASIC SETTING in appropriate ANTI-LOCK BRAKES article in BRAKES.

CENTERING STEERING WHEEL ON STEERING COLUMN

If the installation position of the rear axle (which affects the direction of travel of the vehicle) is not taken into account, the steering wheel may not be centered. The steering wheel and steering column are marked. See **Fig. 6** .

A
Line on steering wheel

B
Punch mark on steering column

When removing steering wheel, a basic setting of the steering angle sensor must be performed. For zero position of steering angle sensor procedure, see FUNCTION 04 - BASIC SETTING in appropriate ANTI-LOCK BRAKES article in BRAKES.

CAUTION: Steering wheel to column positions must not be changed! Only then the center position on the rack can be guaranteed.

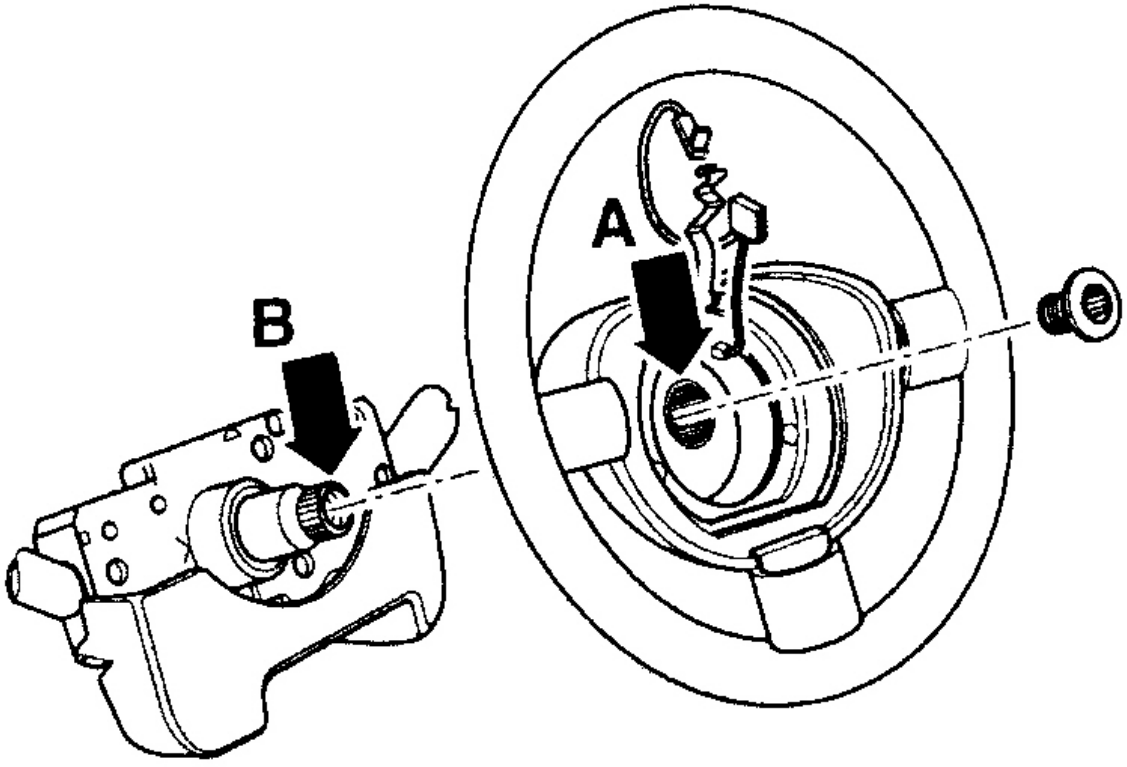

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Fig. 6: Installed Position Of Steering Wheel On Steering Column
Courtesy of VOLKSWAGEN UNITED STATES, INC.

CAMBER ADJUSTMENT

NOTE: If the values are outside the tolerance, the vehicle inclination to side must be checked and if necessary compensated before performing adjustments. See RIDE HEIGHT ADJUSTMENT .

Front Axle

Before attempting any adjustments, perform **PRELIMINARY CHECKS** . Front wheel camber cannot be set separately. Camber can be evened out uniformly, by loosening subframe bolts and shifting subframe position until correct camber range is obtained.

CAUTION: Manufacturer recommends replacing front subframe bolts if they are loosened or removed.

Working under vehicle, remove sound-deadening pan. Loosen subframe bolts (1) and (2). See **Fig. 7** . Press subframe from side to side until camber is equalized on both sides. See **WHEEL ALIGNMENT SPECIFICATIONS** . Using NEW subframe bolts, torque bolts to 74 ft. lbs. (100 N.m) plus an additional 90°

turn. After subframe bolts are torqued, recheck all wheel alignment settings including caster, readjusting as necessary.

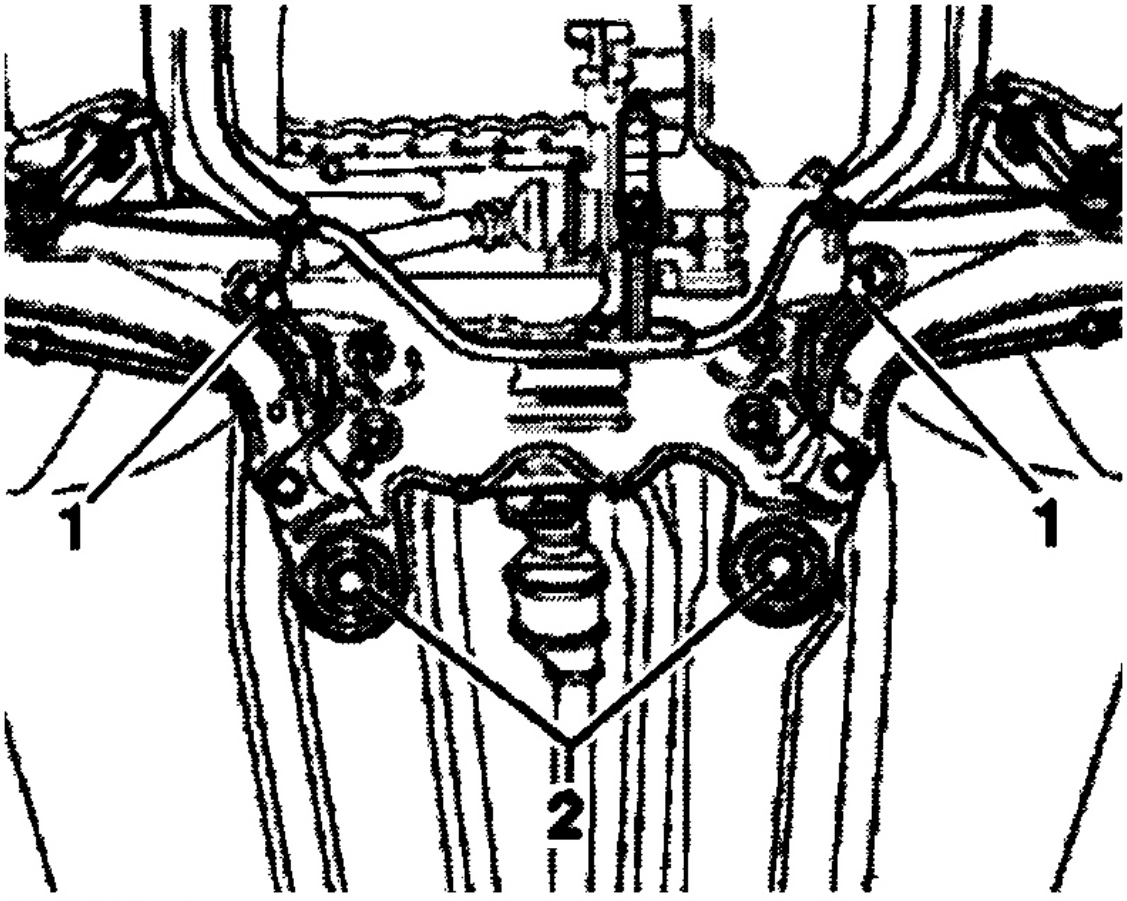

Fig. 7: Locating Subframe Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Rear Axle

Camber on rear axle cannot be adjusted. If a value lies outside the tolerances, check ride height and adjust if necessary. See **RIDE HEIGHT ADJUSTMENT** . If the measured values lie outside allowed tolerances, axle beam must be checked for damage and if necessary replaced.

CASTER ADJUSTMENT

Before attempting any adjustments, perform **PRELIMINARY CHECKS** . Front and rear caster are not adjustable. If caster is not as specified, locate and replace damaged or worn suspension parts.

TOE ADJUSTMENT - REAR

NOTE: If the values are outside the tolerance, the vehicle inclination to side must be

checked and if necessary compensated before performing adjustments. See RIDE HEIGHT ADJUSTMENT .

CAUTION: Manufacturer recommends replacing rear axle beam mounting bracket bolts if they are loosened are removed.

Before attempting any adjustments, perform **PRELIMINARY CHECKS** . Rear axle total toe is not adjustable. Only by sliding the mounting brackets is it possible to balance the individual toe values. If measured values lie outside the allowed tolerances, check axle beam for damage and replace, if necessary. To balance rear axle toe, perform following:

1. Loosen all bolts on bearing bracket (1). See **Fig. 8** . Slide bearing bracket laterally until toe is balanced on both sides.
2. After balancing toe, using NEW bolts, tighten mounting bracket bolts to specification. See **TORQUE SPECIFICATIONS** . After bolts are torqued, recheck all wheel alignment settings readjusting as necessary.

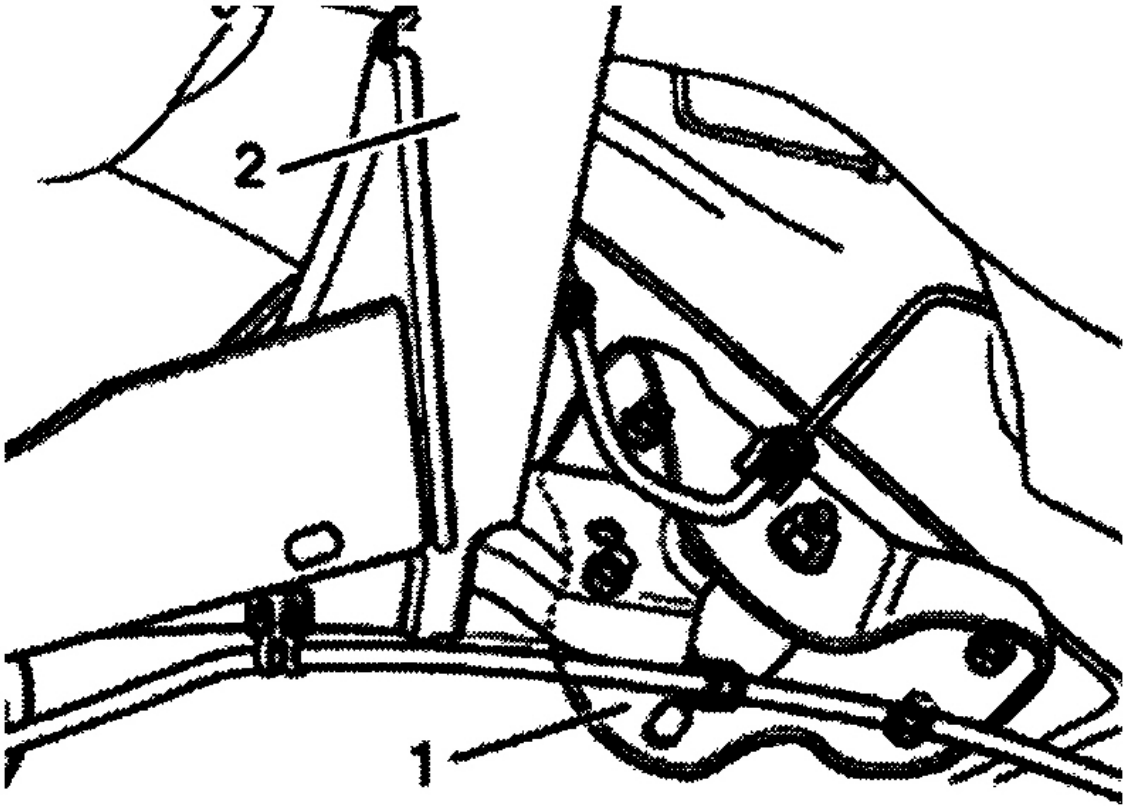

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Fig. 8: Locating Rear Axle Bearing Mounting Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TOE ADJUSTMENT - FRONT

Before attempting any adjustments, perform **PRELIMINARY CHECKS** . To adjust toe, loosen lock nut "1" on tie rod. See **Fig. 9** . Also, loosen rack boot outer clamp. Adjust toe by turning tie rod until proper setting is reached. Do not allow boot to twist during adjustment, straighten twisted boots when toe in is set. Tighten tie rod lock nuts and clamps. Recheck toe adjustment.

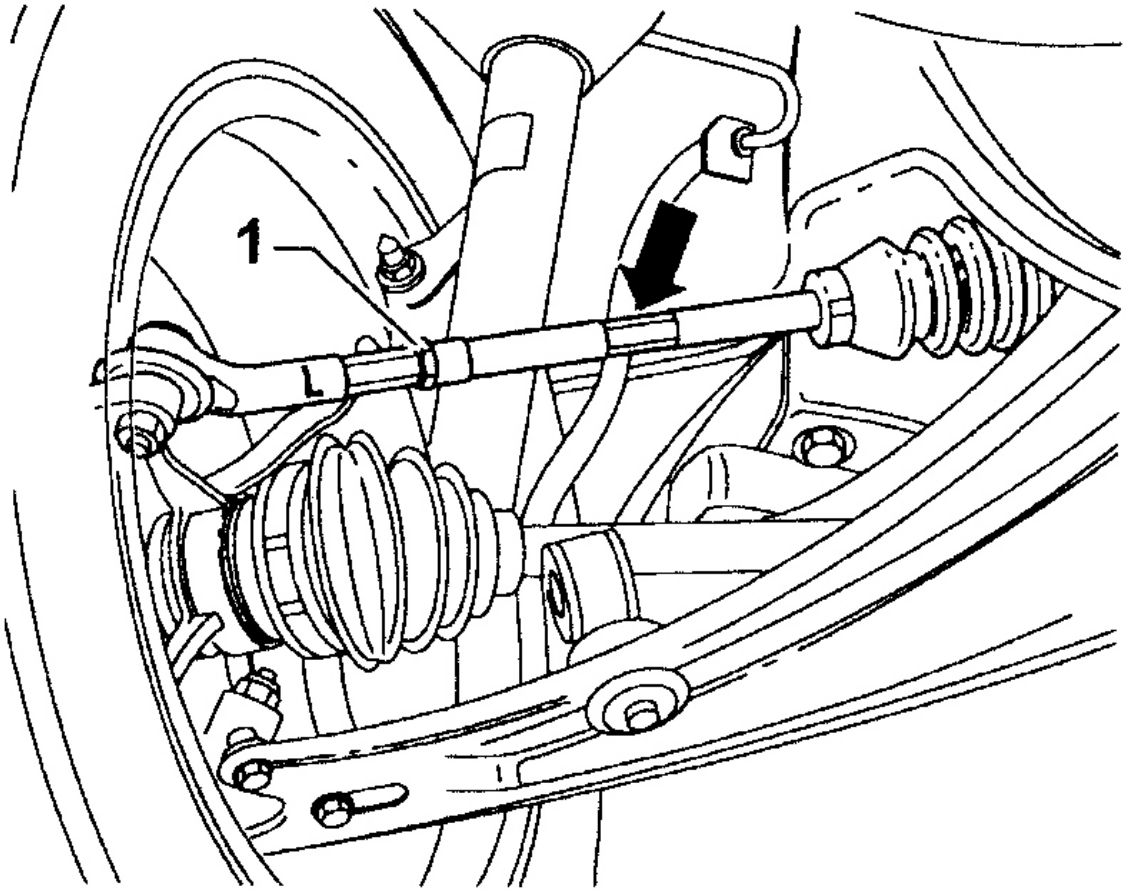

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Fig. 9: Adjusting Front Axle Toe
Courtesy of AUDI OF AMERICA, INC.

LEFT & RIGHT WHEEL LOCK CHECKING

This test is only necessary if:

- The steering locks differ by more than 2 degrees from one another from the steering center point
- One side has contact between tire and a front axle component or body at full lock
- Turning circles left/right differ.

The distance between front axle components and tires (arrow) must be the same at full lock (full turn left/right). See **Fig. 10** . If the distances are unequal, this can be corrected by turning left/right tie rod.

For example, if the right steering lock is smaller than the left:

- Loosen toe rod lock nuts
- Turn left tie rod counterclockwise (unscrew tie rod end)
- Turn tie rod, right side equal amount to left but in opposite direction (turns tie rod end in)
- Check total toe

Check total toe is still set to prescribed specifications after completing adjustments. Tighten tie rod lock nuts. After tightening tie rod lock nut it is possible that the value will change slightly. If the set value does not deviate by more than 2' from specification, the setting is OK.

NOTE: After turning tie rods, make sure that the tie rod boots are not twisted.

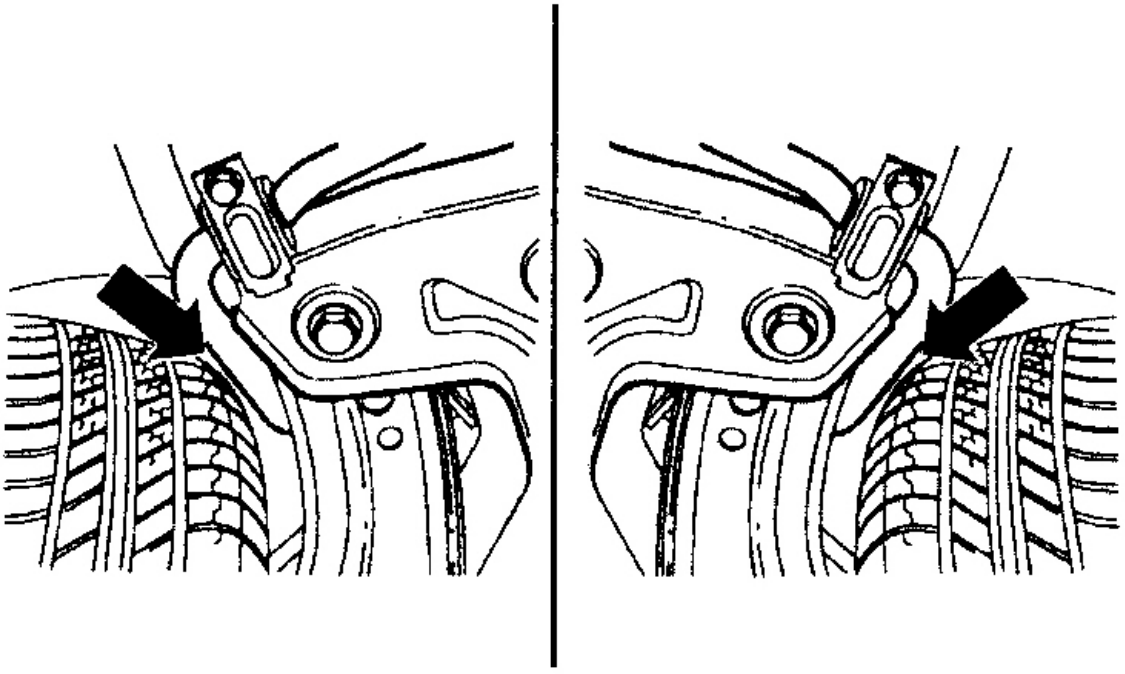

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Fig. 10: Identifying Front Axle Components & Tires
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Rear Axle Beam Mounting Bracket Bolts (1)	
Step 1	22 (30)
Step 2	Tighten additional 90 degrees

Steering Wheel Nut	37 (50)
Subframe Bolts (1)	
Front	
Step 1	74 (100)
Step 2	Tighten additional 90 degrees
Tie Rod Lock Nut	37 (50)
Wheel Bolts	89 (120)
(1) Manufacturer recommends replacing fasteners if loosened or removed.	

WHEEL ALIGNMENT SPECIFICATIONS

NOTE: To identify suspension variation, see MODEL IDENTIFICATION .

WHEEL ALIGNMENT SPECIFICATIONS (BASIC SUSPENSION - 1GJ)

Application	Preferred (1)	(1) Range
Beetle		
Caster (2)(3)		
Front	7° 40'	7° 10' To 8° 10'
Rear	(4)	(4)
Camber (Wheels In Straight Ahead Position) (3)		
Front	-30'	-1° To 0°
Rear	-1° 27'	-1° 17' To -1° 37'
Toe		
Front (Wheels Not Pressed)	0'	0' To 10'
Rear (5)(6)	20'	10' To 30'
Toe Out On Turns At 20° (Steering Angle To Left & Right)		
Front	-1° 30'	-1° 10' To -1° 50'

(1) Measurement is in degrees(°) and minutes (').

(2) Not adjustable.

(3) Maximum allowable difference between sides 30'.

(4) Specification not available.

(5) Total toe at specified camber.

(6) Maximum allowable difference from straight-ahead running position is 20'.

WHEEL ALIGNMENT SPECIFICATIONS (SPORT SUSPENSIONS - 1GD & (1) G87)

Application	Preferred (2)	(2) Range

Beetle		
Caster [3][4]		
Front	7° 50'	7° 20' To 8° 20'
Rear	[5]	[5]
Camber (Wheels In Straight-Ahead Position) [4]		
Front	-33'	-1° 3' To 3'
Rear	-1° 27'	-1° 17' To -1° 37'
Toe		
Front (Wheels Not Pressed)	0'	0' To 10'
Rear [6][7]	25'	15' To 35'
Toe Out On Turns At 20° (Steering Angle To Left & Right)		
Front	-1° 31'	-1° 11' To -1° 51'

[1] G87 suspension specifications are for vehicle built from July, 2000.

[2] Measurement is in degrees(°) and minutes (').

[3] Not adjustable.

[4] Maximum allowable difference between sides 30'.

[5] Specification not available.

[6] Total toe at specified camber.

[7] Maximum allowable difference from straight-ahead running position is 20'.